

ABSTRACT OF THE INVENTION

An optical position-tracking system comprises an optical device for generating an incident light beam and a reference light beam from a light beam. Moreover, the optical position-tracking system further comprises a light beam steering device for sweeping the incident light beam through an angular range to cause a reflection of the incident light beam by a target, whereas the reflection of the incident light beam is directed to interfere with the reference light beam to form an interference light beam. Additionally, the optical position-tracking system enables determination of a position of the target using an interferometric technique utilizing an angular value of the incident light beam and the interference light beam, whereas the angular value depends on the reflection. ~~If the light beam has a plurality of wavelengths, either due to the existence of these wavelengths simultaneously, or over a time interval having multiple wavelengths, the absolute position of the target can be determined. If the light beam has a single wavelength, the relative position of the target can be determined.~~